



Screening Policy for Early Detection of Cervical Cancer

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Abstract

Cervical cancer is one of the leading causes of cancer-related deaths among women worldwide. Early detection through effective screening programs has been proven to reduce the incidence and mortality rates of cervical cancer. Objective: This study aims to analyze screening policies for early cervical cancer detection. Methods: A literature review from various references will be used. Results: The findings indicate that the primary screening techniques include cytology tests (Pap smear and liquid-based cytology), visual inspection (VIA and VILI), and HPV-DNA testing. Challenges in implementing screening programs include a lack of trained healthcare personnel, unequal access to services, and low adherence to follow-up for abnormal screening results, particularly in remote and low-income areas. Indonesia has adopted a national strategy aligned with WHO recommendations, encompassing health promotion, pre-cancer screening, appropriate referral pathways, standard facilities and equipment provision, and HPV vaccination policies. Conclusion: This study concludes that comprehensive guidelines are needed to regulate the organization and implementation of screening programs, including recommendations for target age groups, screening intervals, and a sustainable system for evaluation and monitoring to enhance the effectiveness of early cervical cancer detection.

Keywords

policy; early detection; cervical cancer

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Introduction

Cervical cancer is the fourth most common cancer in woman, with an evaluated worldwide frequency based on age benchmarks of 13.1 per 100,000 women in 2018 (Arbyn et al., 2020). Cervical cancer is essentially a preventable illness and assaults more than 250,000 women in nations with low and medium HDI (*Human Development Index*) each year (GLOBOCAN, 2020). Screening with different methods has been examined as a potential methodology to decrease this issue. Screening techniques are anticipated to distinguish early stages and diminish movement to obtrusive cervical cancer and related passings. Countries that have successfully implemented national screening programs using cytology (Pap tests) have reduced mortality and incidence of cervical cancer (Aklimunnessa et al., 2006; Landy et al., 2016; Maine et al., 2011). HPV-DNA testing moreover appears high affectability and specificity for cervical cancer screening (Koliopoulos et al., 2017; Sangrajrang et al., 2017; Thomsen et al., 2020).

WHO has suggested the utilize of HPV-DNA testing or cytology as the essential screening instrument for cervical cancer, depending on accessible assets and framework (World Health Organization, 2013). In expansion, different displaying thinks about too appear the benefits of cervical screening in lessening mortality from cervical cancer (Landy et al., 2016; Su et al., 2013). In spite of the fact that cytology and HPV-DNA testing appear promising comes about for cervical cancer screening (Aklimunnessa et al., 2006; Landy et al., 2016; Sangrajrang et al., 2017; Thomsen et al., 2020), they confront operational challenges such as tall usage and usage costs, the require for pro specialists, and research facility help (Catarino et al., 2015; World Health Organization, 2002).

Method

The method used in this research is a

literature review from various references.

Result and Discussion

Screening

Definition of Screening

Screening could be a open wellbeing intercession that comprises of testing all women at hazard of cervical cancer, the lion's share of whom are asymptomatic. In this manner, composed screening programs outlined and managed at the central level to reach the foremost women at chance are superior than artful screening (IAEA, 2013).

Purpose of Screening

Screening focus to distinguish pre-cancerous changes, which, on the off chance that cleared out untreated, can lead to cancer. Cervical cancer screening is utilized to discover changes in cervical cells that can cause cancer. Screening incorporates cervical cytology (a Pap test or Pap spread), human papillomavirus (HPV) testing, or both. Most women ought to experience standard cervical cancer screening (ACOG, 2024).

Cervical cancer screening must be financially reasonable, satisfactory to the target populace, and have potential benefits that exceed the risks. Screening adequacy is decided by whether there's a populace survival advantage, which can be evaluated utilizing clinically based cancer screening and registry information (Fontham et al., 2020; Shastri et al., 2022).

In nations with a tall predominance of HPV infection, cervical cancer screening is basic. HIV-positive women have more tireless HPV diseases and the next rate of cervical precancer and intrusive cancer (Rossi & Carozzi, 2019). If people living with HIV are in endemic areas, screening results may be positive in 15-20% of the target population. Cytology screening is similarly successful in HIV-positive and HIV-negative women. In spite of the fact that HIV-infected women are at more prominent chance of developing precancerous injuries and cancer, follow-up

examination and treatment may not be a need for these women, who have competing wellbeing and social needs. All women who have access to affordable services are recommended to undergo cervical cancer screening. Positive cervical cancer screening test results with HIV testing need to be linked with caution. In any case, women with precancers may advantage from knowing their HIV status, particularly on the off chance that antiretroviral (ARV) treatment is accessible.

Screening criteria for women known to be infected with HIV should be developed at the national level, taking into account the issue of cervical cancer.

Screening Techniques

Cytological Screening

Cytology-based screening strategies incorporate ordinary Pap tests and liquid-based-cytology (LBC) tests. In a Pap test, a cell test is taken from the move zone of the cervix employing a spatula or wooden brush with a long tip. The test is at that point spread on a glass slide and quickly settled to protect the cells. Another, the slides are sent to the cytology research facility to be stained and inspected employing a magnifying lens to decide whether the cells are ordinary and to classify them concurring to the Bethesda classification (Deepa & Rao, 2024; Hussain et al., 2020). The LBC test includes exchanging the example from a brush to a additive arrangement. The example is at that point sent to the research facility where the slides are arranged (Makde & Sathawane, 2022). LBC is more costly than ordinary Pap spread cytology, and research facility staff require extra preparing to perused the slides. A few thinks about have appeared that LBC encompasses a comparative affectability to Pap spread (Gupta et al., 2019; Honarvar et al., 2022). Wellbeing laborers are mindful for guaranteeing that women are educated almost the comes about and get fitting follow-up and treatment as demonstrated. The precision of cytological examination depends on the quality of benefit, counting inspecting methods

(spread collection and obsession), recoloring, and translation of smears within the research facility. Beneath the finest conditions, conventional cytology can distinguish up to 87% of precancers and cancers. In any case, beneath antagonistic conditions, the affectability can reach 30%. The specificity of this test is more often than not more than 90% (Pathuthara et al., 2023).

Visual Inspection

Visual inspection consists of an inspection with acetic acid (VIA) and a visual inspection with Lugol's iodine (VILI). Abnormalities in the cervical mucosa are identified through inspection without magnification after dilute acetic acid (VIA) or Lugol's iodine (VILI) (Catarino et al., 2018; Egede et al., 2018; Paswan et al., 2018). VIA and VILI are alternatives to cytology examination when resources are limited because laboratory services are not required (Fokom Domgue et al., 2020). VIA has an average sensitivity of around 86% in detecting both invasive and non-invasive abnormal lesions (Goldie et al., 2005a). A study showed that VILI can detect 92% of lesions, higher than VIA or cytology. Its ability to identify women without disease is similar to VIA (85%) and lower than the Pap test (Hartmann et al., 2001; Sankaranarayanan et al., 2005). VILI is a relatively simple and painless procedure that can be performed in clinics and outpatient facilities. Assessment is done immediately; no specimen or specimen processing is required (Jeyakumar & Mohanapu, 2019).

HPV Test

The new screening procedure is based on the detection of high-risk HPV DNA in vaginal or cervical smears. Collected specimens are transported to the laboratory for processing. Current HPV DNA methods require sophisticated and expensive laboratory equipment (Bartosik et al., 2024; Mahmoodi et al., 2019). Work is underway to develop more affordable and less complex tests that can be performed in lower-resource settings. Detection of high-risk HPV does not indica-

te the presence of pre-cancer or cancer or not. This is only related to the presence of HPV infection. HPV infection is widespread in women under the age of 35 years, and most resolve spontaneously (Bhatla & Singhal, 2020). When HPV detection is used as the primary screening test, the sensitivity for detecting abnormalities is relatively high, more than 90% (Agosti & Goldie, 2007; Partridge et al., 2008a). The combination of cytology and HPV testing has a high sensitivity and a negative predictive value approaching 100% (Goldie et al., 2005b). Mexico's experience in HPV testing, self-sampling practices, and other approaches that have further opportunities for patient screening provide examples to consider when developing new strategies in developing countries (Lazcano-Ponce et al., 2010). Increasing the interval between examinations for women who test negative is possible. The main challenge in successfully implementing both tests, especially in low-resource areas, is high-cost and reliable transportation methods (Bhatla & Singhal, 2020)

Screening and Treatment Approaches

With a single-visit approach, physicians can offer immediate treatment to women with a positive VIA or VILI evaluation without a cytologically confirmed screening test. Cryotherapy is one potential treatment approach. The Alliance for Cervical Cancer Prevention has conducted research showing that a screening and treatment approach involving one or two visits may effectively solve the problem of follow-up visits (Bosch et al., 2004; Partridge et al., 2008b). This eliminates the need to wait for a diagnosis, the additional time required to return for treatment, and the need for an extensive tracking system.

Recommendations Regarding Cervical Cancer Screening

Repeated screening demands treatment adherence, which is a particular challenge in remote, poor, and rural areas, where women must take time to perform every

day errands or travel long separations to clinics for testing. Guaranteeing compliance requires keeping up screening registries and establishing update and follow-up components that don't trigger uneasiness or cause shame for women (Graham & Mishra, 2011). Lacking systems, staff, and mastery ruin open instruction, malady reconnaissance, and follow-up observing in resource-poor settings (Blackwell, 2020; Mwanje, 2023).

Usage of screening strategies has challenges. Although HPV testing is less subject to subjectivity or artefact than cytology or VIA, it requires more laboratory facilities, is more expensive than the Pap test, and may be challenging to implement in developing countries. Additionally, HPV testing has higher sensitivity and specificity than cytology, resulting in fewer false-negative results but increased false-positive results and overtriaging colposcopy. This could increment asset requests on wellbeing administrations and uneasiness and physical burden for patients. In spite of the fact that modern and cheaper HPV tests are being created, they are not however accessible for far reaching utilize in creating nations.

Reasonable visual screening strategies such as VIA and VILI are more open to execute in creating nations, and nearby wellbeing laborers can be prepared to perform them. However, the readings may be profoundly subjective, error-prone and not promptly reproducible. In creating nations, the constrained assets accessible to the wellbeing care framework impact the 'structure'; that's, the physical capacity of the restorative framework to treat disease. In turn, basic impediments constrain 'access' and contrarily affect 'processes' and 'outcomes'.

The age criteria and recurrence of cervical cancer screening are as takes after: Women beneath 30 a long time of age ought to not experience screening unless they are known to be contaminated with HIV or live in regions with tall HIV predominance; At a least, national programs ought to organize women matured 30 – 49 for screening; The screening interim (recurrence) ought to not be

less than five a long time (and not less than ten a long time on the off chance that utilizing the HPV test); Need ought to be given to boosting scope in target age bunches at chance and guaranteeing total follow-up of women with irregular screening test comes about instead of boosting the number of tests performed all through a woman's lifetime; In nations with tall HIV predominance, women who test positive for cervical cancer ought to be advertised HIV testing and advising.

The Relationship Between Screening and Cancer Control Programs

Screening is as it were successful in case there's a well-organized framework of follow-up and treatment. Restrictions in executing the screening program are a need of staff prepared in screening strategies and restricted get to to a well-organized framework for follow-up and treatment of irregular discoveries. Women who are found to have anomalies on examination require follow-up, histopathological determination, and conceivably treatment to avoid the advancement of cancer or treat it at an early organize. An compelling framework for follow-up and treatment of women who test positive is maybe the foremost basic component of a fruitful cervical cancer avoidance program. At a least, all women whose comes about are positive or irregular ought to be advised with respect to fitting follow-up and treatment choices. Follow-up ought to be steady with national conventions and based on WHO recommendations (Bateman et al., 2019; Cubie & Campbell, 2020; Nessa et al., 2019; Selmouni et al., 2019).

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National Policy for Control and Prevention of Cervical Cancer

WHO has set a few targets for essential and auxiliary avoidance of cervical cancer, counting 90% of girls getting the human antibody total papillomavirus (HPV) some time recently the age of 15 a long time; 70% of women get screening with a high-performance test some time recently age 35, and repeat before age 35 – 45 years old; 90% of women identified as having pre-cancer get it governance; and as many as 90% of women are diagnosed with cervical cancer get the proper treatment according to the cancer phase (Organization, 2020).

In connection with this, Indonesia has formed a National Cervical Cancer Eradication Strategy, which is in line with WHO in controlling cervical cancer, including providing clear guidelines on health promotion; pre-cancer screening using visual inspection with acetic acid (IVA) and Pap-smear techniques; suitable referral pathways; arrangement of standard offices and gear at the essential benefit level; training and accreditation of health workers; and technical guidelines for pre-cancer screening and management using cryotherapy; as well as clinical guidelines for the diagnosis and management of women with stage 1 to stage 4 cervical cancer (Menteri Kesehatan Republik Indonesia, 2017). Furthermore, the Indonesian Ministry of Health 2021 issued a new policy regarding HPV vaccination with a commitment to immunise all female students aged 10 – 14 years starting in 2023-2024 (Menteri Kesehatan Republik Indone-

sia, 2021).

The National HPV Immunization Program, which started in 2016 in a pilot location (DKI Jakarta), produced good results, with an uptake of around 90 – 95% (Universitas Gadjah Mada, 2018). Then it continued in DI Yogyakarta in 2017, Surabaya in 2018, Manado and Makassar in 2019. In 2020, this program was held in Karanganyar and Sukoharjo Regencies, Central Java Province, and in 2021, it spread to the East Java area, namely Kediri and Lamongan. Furthermore, this HPV immunisation program will be more evenly distributed in the Bai, East Java and Central Java areas and will continue to be distributed to other provinces nationally in 2023. In 2021, it was announced that HPV vaccination was added to.

The National Immunization Program starts in 2023, so this program has public support, mainly without requiring costs. This is supported by previous research results, which stated that the HPV vaccine was safe and no side effects were experienced by schoolchildren (Satari et al., 2019). Various other studies also state that administering two doses of the HPV vaccine has been clinically proven effective (Kosen et al., 2017; Satari et al., 2019; Setiawan et al., 2016). However, the problem with this program is that there is still no implementation to reach targets who have dropped out of school. To overcome this problem, HPV immunisation is carried out at the primary care level (puskesmas and posyandu). In addition, knowledge about HPV and cervical cancer at the community level in the regions is still low, which proves that health promotion regarding immunisation programs is still limited (Endarti et al., 2018; Nugrahani et al., 2017).

Indonesia is committed to providing pre-cancer screening (using IVA or Pap Smear Technique) at Community Health Centers targeting women aged 30 – 50 years at Community Health Centers. This examination is free because the screening fee is included in the National Health Insurance (JKN). However, program uptake is low (around 12% of women meet the criteria). Also, eight out of

38 provinces confirmed this free screening service. This proves that national coverage is also uneven, (Anwar et al., 2018; Aoki et al., 2020; Kim et al., 2013). This low vaccination uptake is due to a lack of knowledge about cervical cancer and a perception of low cancer risk. This is exacerbated by the fear of getting positive screening results and the fear of undergoing a pelvic examination (Kim et al., 2013; Robbers et al., 2021).

These obstacles can be overcome by providing more effective health promotion by providing comprehensive knowledge for women to understand their risk of cervical cancer, what screening is done, management of precancerous conditions, and why early detection is critical to avoid developing cervical cancer. Reported logistical barriers to screening include time availability, inability to attend when the screening service schedule is available, and the distance between the woman's home and the nearest community health centre that provides free screening services (Kim et al., 2013). Overcoming these calculated obstructions is particularly critical for women who live in country and farther ranges and women who work amid clinic benefit hours.

Provocation from the perspective of service providers, for example, human resources (HR) problems, lack of required equipment and supplies, and service orientation problems (Rahmadani et al., 2023; Robbers et al., 2021; Saraswati et al., 2017; Wulan et al., 2019). This is due to a need of preparing and refresher preparing for all qualified wellbeing laborers, the too add up to number of talented wellbeing laborers, and the uneven geographic conveyance of wellbeing specialists, which is an obstacle to increasing screening capacity. In addition, the underutilisation of health information systems at community health centres also hampered the accurate recording of screening utilisation and the capacity to take after up to guarantee women get treatment or re-screening. In spite of the fact that electronic Wellbeing Data frameworks are accessible, they are not however broadly utilized

to guarantee that women who test positive for pre-cancer are reached and energized to go to clinics for cryotherapy, as prescribed in national arrangement

In addition, the number of clinics with functioning cryotherapy devices and health workers trained to use these devices is still far below the number needed to meet policy targets (Wilopo et al., 2023).

Conclusion

Screening is effective when there's a well-organized framework of follow-up and treatment. Restrictions in executing the screening program are a need of staff prepared in screening strategies and constrained get to to a well-organized framework for follow-up and treatment of unusual discoveries. The National Cervical Cancer Eradication Strategy in controlling cervical cancer includes the preparation of guidelines on health promotion, pre-cancer screening, suitable referral stream; arrangement of standard offices and gear at the essential benefit level; preparing and accreditation of wellbeing laborers; and specialized rules for pre-cancer screening and management using cryotherapy; as well as clinical guidelines for the diagnosis and management of women with cervical cancer, as well as HPV vaccination policies. There is a need for comprehensive guidelines explaining the organisation and implementation, screening policies (recommendations for target age groups and screening intervals), and registration, evaluation and monitoring of organised cancer screening programs.

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